IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Art Unit	:	2624
Examiner	:	Andrae S. Allison
Appln. No.	:	10/777,468
Appellants	:	Joseph S. Stam et al.
Filing Date	:	February 12, 2004
Confirmation No.	:	2265
For	:	AUTOMATIC VEHICLE EXTERIOR LIGHT CONTROL

Dear Sir:

APPEAL BRIEF (37 C.F.R. § 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on March 17, 2010.

Please charge any additional fees and credit any overpayments associated with this Appeal Brief to Deposit Account No. 16-2463.

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. § 41.37(c)):

I. Real Party in Interest

II. Related Appeals and Interferences

III. Status of Claims

IV. Status of Amendments

V. Summary of Claimed Subject Matter

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Argument

A. References

1. U.S. Patent No. 6,254,259 issued to Kobayashi
2. Simpson et al., "A Recurrent Neural Network Classifier for Improved Retrievals of Areal Extent of Snow Cover," IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING, Vol. 39, No. 10, October 2001

The final page of this brief bears the attorney's signature.

I. Real Party in Interest

The real party in interest in this application is Gentex Corporation, the assignment to which was recorded at Reel 015455, Frame 0262.

II. Related Appeals and Interferences

Appellants are aware of no appeals, interferences, or judicial proceedings that may be related to, directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

This is an appeal from a Final Rejection of claims 1-6, 17, 18, 23, and 24. No claims currently stand allowed. Claims 7-16 and 19-22 have been cancelled without prejudice. Appealed claims 1-6, 17, 18, 23, and 24 are attached in the appendix hereto.

IV. Status of Amendments

A Restriction Requirement was mailed on April 13, 2007, and a Preliminary Amendment and Response to the Restriction Requirement was filed on May 14, 2007, electing claims 1-6, 17, 18, 23, and 24, and amending independent claim 1. A Notice of Non-Complaint Amendment was mailed on May 21, 2007, and a Response to the Notice of Non-Compliant Amendment and a Substitute Preliminary Amendment and Response to a Restriction Requirement was filed on June 14, 2007, wherein claims 1-6, 17, 18, 23, and 24 were elected and independent claim 1 was amended. In response to the Office Action mailed on June 12, 2007, an Amendment and Reply was filed on October 10, 2007, amending independent claims 1, 17, and 23, and cancelling claims 7-16 and 19-22. A Request for Reconsideration was filed on January 31, 2008, in response to the Final Office Action mailed on December 10, 2007. A subsequent Advisory Action was mailed on February 21, 2008, and a Request for Continued Examination and Amendment and Reply was filed on March 31, 2008, wherein claims 1, 17, and 23 were amended. An Amendment and Reply was filed on July 28, 2008, wherein claims 1, 17, and 23 were amended, in response to a Notice of Non-Complaint Amendment that was mailed on June 27, 2008. In response to the Office Action mailed on October 15, 2008, a Request for Reconsideration was filed on December 23, 2008. A Final Office Action was mailed on April 1, 2009, and a Reply After Final was subsequently filed on May 26, 2009. In response to the Office Action mailed on June 9, 2009, a Reply was filed on September 9, 2009. A Final Office Action

was mailed on December 17, 2009, and a Notice of Appeal was subsequently filed on March 17, 2010.

V. Summary of Claimed Subject Matter

According to one aspect of the present invention, independent claim 1 sets forth an automatic vehicle exterior light control system (5, 250) including a controller (270) configured to effect automatic operation as a function of an ambient light value (p. 5, lines 4-20; and p. 6, line 30 – p. 8, line 16), wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer (p. 8, line 29 – p. 10, line 24; and p. 27, lines 3-9), the controller (270) is further configured to generate an exterior light control signal as a function of the presence of an atmospheric condition of interest (p. 22, line 1 – p. 23, line 12), wherein the controller (270) is further configured to distinguish between reflections off of a highly reflective surface and reflections off of atmospheric conditions of interest, wherein an exterior light control output of the controller (270) is in a first state when reflections off of a highly reflective surface are detected and the exterior light control output is in a second state when reflections off of atmospheric conditions of interest are detected (p. 23, line 13 – p. 27, line 2).

According to another aspect of the present invention, independent claim 17 sets forth an automatic vehicle exterior light control system (5, 250), including a controller (270) configured to effect automatic operation as a function of an ambient light value (p. 5, lines 4-20; and p. 6, line 30 – p. 8, line 16), wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer (p. 8, line 29 – p. 10, line 24; and p. 27, lines 3-9), the controller (270) is further configured to identify the source of a reflection in an image by employing at least one of the parameters selected from the group comprising: mean grayscale value of at least a portion of at least one image, total grayscale value of at least a

portion of at least one image, average grayscale value of at least a portion of at least one image, slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, intercept of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, a coefficient of determination, parabolic fit of at least a portion of column pixel value averages in at least one image, multiple images of differing exposure times, inputs from vehicle pitch sensors, a low-pass filter applied to at least a portion of an image, gradual vertical cutoff in at least a portion of pixel rows within at least one image, row average grayscale value net increase moving downward in at least one image, white-to-red ratio of at least one pixel in at least one white image and at least one pixel in at least one red spectral filtered image, sum of average grayscale values for at least one row in at least one image, increase brightness of controlled vehicle's exterior light and detect increase in reflection, at least one probability function, and at least one neural network, wherein a state of an exterior light control output of the controller is at least partially dependent upon the source of the reflection in the image (p. 8, line 17 – p. 28, line 6).

According to another aspect of the present invention, independent claim 23 sets forth an automatic vehicle exterior light control system (5, 250), including a controller (270) configured to effect automatic operation as a function of an ambient light value (p. 5, lines 4-20; and p. 6, line 30 – p. 8, line 16), wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer (p. 8, line 29 – p. 10, line 24; and p. 27, lines 3-9), the controller (270) is further configured to detect at least one of a pedestrian and a bicyclist and further configured to provide a corresponding indication to an operator of a controlled vehicle, wherein a state of an exterior light control output of the controller (270) is at

least partially dependent upon detection of either a pedestrian or a bicyclist (p. 32, line 26 – p. 33, line 10).

VI. Grounds of Rejection to be Reviewed on Appeal

Whether claims 1-4 and 6 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,254,259 issued to Kobayashi (hereinafter "Kobayashi").

Whether claims 5, 17, and 18 are unpatentable under 35 U.S.C. § 103(a) as being obvious at the time of invention over Kobayashi in view of Simpson et al., "A Recurrent Neural Network Classifier for Improved Retrevals of Areal Extent of Snow Cover," IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING, Vol. 39, No. 10, October 2001 (hereinafter "Simpson").

Whether claims 23 and 24 are unpatentable under 35 U.S.C. § 103(a) as being obvious at the time of invention over U.S. Patent No. 5,798,911 issued to Josié (hereinafter "Josié") in view of U.S. Patent No. 5,693,148 issued to Sekine et al. (hereinafter "Sekine").

VII. Argument

Three groups of claims, as defined by the three independent claims, are essentially presented for consideration on appeal. Independent claim 1 is directed towards an automatic vehicle exterior light control system including a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, the controller is further configured to generate an exterior light control signal as a function of the presence of an atmospheric condition of interest, wherein the controller is further configured to distinguish between reflections off of a highly reflective surface and reflections off of atmospheric conditions of interest, wherein an exterior light control output of the controller is in a first state when reflections off of a highly reflective surface are detected and the exterior light

control output is in a second state when reflections off of atmospheric conditions of interest are detected.

Independent claim 17 sets forth an automatic vehicle exterior light control system, including a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, the controller is further configured to identify the source of a reflection in an image by employing at least one of the parameters selected from the group comprising: mean grayscale value of at least a portion of at least one image, total grayscale value of at least a portion of at least one image, average grayscale value of at least a portion of at least one image, slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, intercept of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, a coefficient of determination, parabolic fit of at least a portion of column pixel value averages in at least one image, multiple images of differing exposure times, inputs from vehicle pitch sensors, a low-pass filter applied to at least a portion of an image, gradual vertical cutoff in at least a portion of pixel rows within at least one image, row average grayscale value net increase moving downward in at least one image, white-to-red ratio of at least one pixel in at least one white image and at least one pixel in at least one red spectral filtered image, sum of average grayscale values for at least one row in at least one image, increase brightness of controlled vehicle's exterior light and detect increase in reflection, at least one probability function, and at least one neural network, wherein a state of an exterior light control output of the controller is at least partially dependent upon the source of the reflection in the image.

Independent claim 23 is directed to an automatic vehicle exterior light control system, including a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, the controller is further configured to detect at least one of a pedestrian and a bicyclist and further configured to provide a corresponding indication to an operator of a controlled vehicle, wherein a state of an exterior light control output of the controller is at least partially dependent upon detection of either a pedestrian or a bicyclist.

As discussed with regard to the arguments below, the three aforementioned independent claims 1, 17, and 23 generally recites an automatic vehicle exterior light control system. Accordingly, Appellants argue as to why all three independent claims and the claims dependent thereon, are not anticipated and would not have been rendered obvious by the references cited by the Examiner are addressed together below when similar rejections are made to the claims.

A. References

1. U.S. Patent No. 6,254,259 issued to Kobayashi

Appellants submit that Kobayashi teaches a vehicle lamp system (1) that includes an environmental detection means (2), illumination control means (3), a lamp (4), and a driving means (5), wherein the environmental detection means (2) includes an image capturing means (2a), weather analysis means (2b), road surface analysis means (2c), and reference data acquisition means (2d) (col. 2, lines 53-61). Appellants submit that Kobayashi further teaches the weather analysis means (2b) detecting weather conditions immediately outside the vehicle by receiving image data from the image capturing means (2a) or the information from the reference data acquisition means (2d) (col. 3, lines 1-5). Additionally, Appellants submit that Kobayashi teaches the road surface analysis means (2c) determining conditions of the road surface by receiving the image data from the image capturing means (2a) or from the reference data

acquisition means (2d), wherein a contrast in brightness of a mark on a road is analyzed, and the road surface analysis means (2c) determines the road surface conditions or geometry of a traveling path from a magnitude in the contrast (col. 3, lines 6-22).

2. Simpson et al., "A Recurrent Neural Network Classifier for Improved Retrievals of Areal Extent of Snow Cover," IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING, Vol. 39, No. 10, October 2001.

Appellants submit that Simpson teaches an accurate detection of aerial extent of snow in mountainous regions (Abstract). Appellants submit that Simpson further teaches a feed-forward neural network (FFNN) being used to classify individual images, and a recurrent neural network (NN) is used to classify sequences of images, wherein continuous outputs of the NN, combined with a linear mixing model, provides support for mixed-pixel classification (Abstract).

3. U.S. Patent No. 5,798,911 issued to Josié

Appellants submit that Josié teaches headlamp systems in operation so that in every instance of a journey, the minimum beam range to prevent dropping below the instantaneous stopping distance of the vehicle on the particular light intensity required is determined and set. Additionally, Appellants submit that Josié teaches an automatic light system having a light sensor, wherein the light sensor is arranged externally on the vehicle and measures the average external light intensity independent of instantaneous dazzling, shade, and the like, and passes the corresponding signals to the control means (60) (col. 9, lines 5-10).

4. U.S. Patent No. 5,963,148 issued to Sekine et al.

Appellants submit that Sekine teaches an image of a road area ahead of a vehicle being formed based on road data read from a navigation system or based on an image shot by a

camera means such as a video camera, wherein a temperature profile ahead of the vehicle detected by a temperature detecting means such as an infrared camera is superposed on the image of the radio area (Abstract).

B. Rejection of Claims 1-4 and 6 Under 35 U.S.C. § 102(b)

The Examiner in the latest Final Office Action rejected claims 1-4 and 6 under 35 U.S.C. § 102(b) as being anticipated by Kobayashi.

The Manual of Patent Examining Procedure (MPEP) states that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP § 2131; and *Verdelgaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). Further, dependent claims include all the limitations of the claims with which they depend. MPEP § 608.01(n).

1. Independent Claim 1

Appellants submit that independent claim 1 sets forth a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a **weighted average** of a plurality of ambient level readings acquired from a photo transducer. Thus, by controlling an automatic operation as a function of a weighted average of ambient light, the system can continue to perform during imager blockage and/or faulty imager detection. Appellants submit that Kobayashi does not teach such control as a function of a weighted average, and instead, Kobayashi teaches the environmental detection means (2c) determining a magnitude in a contrast of brightness (col. 3, lines 6-22). Appellants submit that this determination of a magnitude in a contrast of brightness does not teach a weighted average of a plurality of ambient light level readings acquired from a photo transducer, as set forth in independent claim 1. Moreover, Appellants submit that Kobayashi's deficiencies are further

emphasized by Kobayashi not including anywhere in the application the phrase "weighted average." Therefore, Appellants submit that Kobayashi does not teach each and every element of independent claim 1, and request reversal of the § 102(b) rejection as to independent claim 1.

Furthermore, the Examiner in the Final Office Action dated April 1, 2009, rebutted Appellants' previously submitted arguments by citing to col. 3, lines 22-44 and col. 9, lines 4-10 of Kobayashi. Appellants submit that Kobayashi at col. 3, lines 22-44 teaches the reference data acquisition means (2d) acquiring and delivering reference data to the weather analysis means (2b), the road surface analysis means (2c), and the illumination control means (3). Appellants further submit that Kobayashi at col. 9, lines 4-10 teaches an illumination control system (17) and a controller (18), wherein the controller (18) receives, as input signals and input data, a signal output from an automatic headlamp switch (19), weather information from a road-to-vehicle communication/navigation device (20), a signal output from a wiper control switch (21), a detection sensor (22), information on a result obtained by an image captured by a CCD camera (23) and subsequently analyzed by an image analysis device (24), and a detection signal output from an outside air/humidity sensor (25). Appellants submit that clearly one having ordinary skill in the art would understand the reference data, as taught by Kobayashi, does not teach a weighted average, as set forth in independent claim 1. Thus, Appellants request reversal of the § 102(b) rejection as to independent claim 1 for these additional reasons.

In other words, although the Examiner cites to col. 3, lines 22-44 of Kobayashi, as teaching these claim limitations, Appellants can find no recitation in Kobayashi or the other art of record that teaches the use of a weighted average. The language pointed out by the Examiner merely describes that data is delivered to the illumination control means. Additionally, the Examiner on page 2 of the latest Final Office Action stated that Kobayashi teaches a controller configured to effect automatic operation as a function of an ambient light value, which inherently teaches that light received by a phototransducer is a weighted average. Appellants disagree with

such a conclusory statement. The Examiner should recognize that a "weighted average" generally is defined as an average in which each quantity to be averaged is assigned a weight. The weightings determine the relative importance of each quantity on the average. Weightings are the equivalent of having that many like items with the same value involved in the average. *See*, *inter alia*, p. 8, line 29 – p. 10, line 24 and p. 27, lines 3-9 of the present application. In Kobayashi, there is no weighted average; however reference data is merely delivered to the weather analysis system and road surface analysis system. No "weighted average" is used such that a plurality of ambient light level readings are acquired from a photo transducer, as is presently recited in Appellants' claims. Accordingly, since each and every element as set forth in independent claim 1 is not found, either expressly or inherently in Kobayashi, this reference cannot anticipate claim 1. Accordingly, Appellants request the rejection of independent claim 1 on this ground be reversed for these additional reasons.

2. Dependent claims 2-4 and 6

Dependent claims 2-4 and 6 are directly or ultimately dependent upon one of independent claim 1, and include all the limitations thereof. For at least the reasons set forth above, Appellants submit that Kobayashi does not teach each and every element of independent claim 1. More specifically, Appellants submit that Kobayashi fails to teach, *inter alia*, a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer, as set forth in independent claim 1. Therefore, Appellants submit that Kobayashi does not teach each and every element of dependent claims 2-4 and 6, and request reversal of the § 102(b) rejection as to dependent claims 2-4 and 6.

In further regards to dependent claims 2-4 and 6, for at least the reasons set forth above, Appellants submit that Kobayashi fails to teach where a highly reflected surface is

selected from the limitations, as set forth in claim 2. Similarly, claim 3 sets forth a group of the atmospheric conditions of interest, claim 4 sets forth a group of highly reflective surfaces, and claim 6 sets forth a group of items manipulated by the controller. These limitations are also neither taught nor suggested by Kobayashi or the other art of record. Therefore, Appellants submit that Kobayashi fails to teach each and every element of dependent claims 2-4 and 6, and request reversal of the § 102(b) rejection of dependent claims 2-4 and 6 for these additional reasons.

C. Rejection of Claims 5, 17, and 18 Under 35 U.S.C. § 103(a)

The Examiner in the latest Final Office Action rejected claims 5, 17, and 18 under 35 U.S.C. § 103(a) as being unpatentable over Kobayashi in view of Simpson.

The MPEP states that an Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP § 2142, *In re Rinehart*, 531 F.2d 1048 (CCPA 1976); *In re Linter*, 458 F.2d 1013 (CCPA 1972); and *In re Sanders*, 444 F.2d 599 (CCPA 1971). The combination of prior art references must have been "obvious to a person with ordinary skill in the art." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007). To establish a case of *prima facie* obviousness, there must be some apparent reason why a person of ordinary skill in the art would combine the references, and the analysis should be made explicit. *Id.* at 1741; MPEP § 2142. Further, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (CCPA 1974). If the prior art does not teach or suggest all of the claim limitations, the Examiner must explain why the differences between the prior art and the claimed invention would have been obvious to one having ordinary skill in the art. MPEP § 2143. The ultimate determination of patentability is based on the entire record, by a preponderance of the evidence, with due

consideration to the persuasiveness of any arguments and any secondary evidence. MPEP § 2142; and *In re Oetiker*, 977 F.2d 1443 (Fed. Cir. 1992).

1. Independent Claim 17

Appellants submit that independent claim 17 sets forth a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a **weighted average** of a plurality of ambient level readings acquired from a photo transducer. Thus, by controlling an automatic operation as a function of a weighted average of ambient light, the system can continue to perform during imager blockage and/or faulty imager detection. Appellants submit that Kobayashi does not teach such a weighted average, and instead, Kobayashi teaches the environmental detection means (2c) determining a magnitude in a contrast of brightness (col. 3, lines 6-22). Appellants submit that this determination of a magnitude in a contrast of brightness does not teach a weighted average of a plurality of ambient light level readings acquired from a photo transducer, as set forth in independent claim 17. Moreover, Appellants submit that Kobayashi's deficiencies are further emphasized by Kobayashi not including anywhere in the application the phrase "weighted average." Additionally, Appellants submit that Simpson teaching a state of an exterior light control output of a controller that is at least partially dependent upon a source of a reflection in an image fails to teach or suggest the aforementioned deficiencies of Kobayashi. Therefore, Appellants submit that Kobayashi in view of Simpson does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 17, and that these references would not have otherwise rendered this claim obvious. Thus, Appellants request reversal of the § 103(a) rejection as to independent claim 17.

Furthermore, Appellants agree with the Examiner's statement on page 6 of the latest Final Office Action as to the deficiencies of Kobayashi, such that Kobayashi does not

expressly disclose at least one probability function, and at least one neural network. Appellants submit that the FFNN of Simpson being used to classify individual images, and a recurrent NN being used to classify sequences of images, wherein continuous outputs of the recurrent NN, combined with the linear mixing model, provides support for mixed-pixel classification does not teach or suggest to one having ordinary skill in the art to arrive at a weighted average, as set forth in independent claim 17. Therefore, Appellants submit that Kobayashi in view of Simpson does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 17, and that these references would not have otherwise rendered this claim obvious. Thus, Appellants request reversal of the § 103(a) rejection as to independent claim 17 for these additional reasons.

Moreover, the Examiner in the Final Office Action dated April 1, 2009, rebutted Appellants' previously submitted arguments by citing to col. 3, lines 22-44 and col. 9, lines 4-10 of Kobayashi. Appellants submit that Kobayashi at col. 3, lines 22-44 teaches the reference data acquisition means (2d) acquiring and delivering reference data to the weather analysis means (2b), the road surface analysis means (2c), and the illumination control means (3). Appellants submit that Kobayashi at col. 9, lines 4-10 teaches an illumination control system (17) and a controller (18), wherein the controller (18) receives, as input signals and input data, a signal output from an automatic headlamp switch (19), weather information from a road-to-vehicle communication/navigation device (20), a signal output from a wiper control switch (21), a detection sensor (22), information on a result obtained by an image captured by a CCD camera (23) and subsequently analyzed by an image analysis device (24), and a detection signal output from an outside air/humidity sensor (25). Appellants submit that clearly the reference data, as taught by Kobayashi, does not teach or suggest to one having ordinary skill in the art to arrive at a weighted average, as set forth in independent claim 17, and that the FFNN used to classify individual images of Simpson fails to teach or suggest the aforementioned deficiencies of

Kobayashi. Thus, Appellants request reversal of the § 103(a) rejection as to independent claim 17 for these additional reasons.

Put another way, although the Examiner cites to col. 3, lines 22-44 of Kobayashi, as teaching these claim limitations, Appellants can find no recitation in Kobayashi or the other art of record that teaches the use of a weighted average. The language pointed out by the Examiner merely describes that data is delivered to the illumination control means. Additionally, the Examiner on page 2 of the latest Final Office Action stated that Kobayashi teaches a controller configured to effect automatic operation as a function of an ambient light value, which inherently teaches that light received by a phototransducer is a weighted average. Appellants disagree with such a conclusory statement. The Examiner should recognize that a "weighted average" generally is defined as an average in which each quantity to be averaged is assigned a weight. The weightings determine the relative importance of each quantity on the average. Weightings are the equivalent of having that many like items with the same value involved in the average. *See*, *inter alia*, p. 8, line 29 – p. 10, line 24 and p. 27, lines 3-9 of the present application. In Kobayashi, there is no weighted average; however reference data is merely delivered to the weather analysis system and road surface analysis system. No "weighted average" is used such that a plurality of ambient light level readings are acquired from a photo transducer, as is presently recited in Appellants' claims. Accordingly, since each and every element as set forth in independent claim 17 is not found, either expressly or inherently in Kobayashi nor Simpson, these references would not have rendered obvious independent claim 17. Accordingly, Appellants request the rejection of independent claim 17 on this ground be reversed for these additional reasons.

2. Dependent Claims 5 and 18

Dependent claims 5 and 18 are dependent upon one of independent claims 1 and 17, respectively, and include all the limitations thereof. For at least the reasons set forth above, Appellants submit that Kobayashi does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claims 1 and 17, and that Simpson fails to teach or suggest the aforementioned deficiencies of Kobayashi. More specifically, Appellants submit that Kobayashi in view of Simpson fails to teach or suggest to one having ordinary skill in the art to arrive at, *inter alia*, a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer, as set forth in independent claims 1 and 17. Therefore, Appellants submit that Kobayashi in view of Simpson does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of dependent claims 5 and 18, and that these references would not have otherwise rendered these claims obvious. Thus, Appellants request reversal of the § 103(a) rejection as to dependent claims 5 and 18.

In further regards to dependent claim 5, Simpson apparently has been cited for its use of an exterior light control output of the controller that is at least partially dependent upon the source of the reflection in the image. As Appellants have discussed previously, Kobayashi teaches an automatic vehicle exterior light control system, wherein the reflections are identified by employing a slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image (col. 3, lines 50-52), and increases brightness of the controlled vehicle's exterior light (col. 3, lines 50-52). Simpson teaches a state of an exterior light control output of the controller that is at least partially dependent upon the source of the reflection in the image. As Appellants have noted in its prior response, the Examiner bears the burden of factually supporting any *prima facie* conclusion of obviousness. To make such a rejection, there must be some apparent reason why a person of ordinary skill in the art would

combine the references, and the analysis should be made explicit. Appellants' position is that even if such a combination were made, it still would not teach the invention as presently recited in Appellants' claim 5. Therefore, Appellants request reversal of the § 103(a) rejection of dependent claim 5 for these additional reasons.

D. Rejection of Claims 23 and 24 Under 35 U.S.C. § 103(a)

The Examiner in the latest Final Office Action rejected dependent claims 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Josié in view of Sekine.

1. Independent Claim 23

Appellants submit that independent claim 23 sets forth a controller configured to affect automatic operation as a function of an ambient light value, wherein the ambient light value is a **weighted average** of a plurality of ambient light level readings acquired from a photo transducer. Thus, by controlling an automatic operation as a function of a weighted average of ambient light, the system can continue to perform during imager blockage and/or faulty imager detection. Appellants submit that Josié in view of Sekine does not teach or suggest such a weighted average, and instead, Josié teaches a light sensor arranged externally on the vehicle and measuring the external light intensity independently of instantaneous dazzling, shade, and the like (col. 9, lines 5-10), and Sekine fails to teach or suggest the aforementioned deficiencies of Josié. Appellants submit that an average external light intensity, which must be independent of other light in the viewing area of Josié does not teach or suggest to one having ordinary skill in the art to arrive at a weighted average, as set forth in independent claim 23. Further, Appellants submit that the image captured by a video camera and temperature profile detected by an infrared camera, and superimposed on the image for a navigation system, as taught by Sekine, fails to teach or suggest a weighted average, as set forth in dependent claim 23. Therefore, Appellants

submit that Josié in view of Sekine does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 23, and that these references would not have otherwise rendered this claim obvious. Thus, Appellants request reversal of the § 103(a) rejection as to independent claim 23.

In other words, Josie teaches an external light sensor arranged externally on the vehicle for measuring the average external light intensity independent of instantaneous dazzling, shade, and the like, and passes the corresponding signals to the control means (60) (col. 9, lines 5-10). Thus, Josie does not teach the use of "weighted averages" that are supplied to a light sensor. Moreover, Sekine teaches an image of a road area ahead of a vehicle being formed based on road data read from a navigation system or based on an image shot by a camera means such as a video camera, wherein a temperature profile ahead of the vehicle detected by a temperature detecting means, such as an infrared camera, is superposed on the image of the radio area.

In contrast, independent claim 23 recites a controller configured to affect automatic operation as a function of an ambient light value, wherein the ambient light value is a *weighted average* of a plurality of ambient light level readings acquired from a photo transducer. Thus, by controlling an automatic operation as a function of a weighted average of ambient light, the system can continue to perform during imager blockage and/or faulty imager detection. The limitations of independent claim 23 simply are not taught nor suggested in Josie or Sekine. Thus, Appellants again request reversal of the rejections under § 103(a) as to independent claim 23.

2. Dependent Claim 24

Dependent claim 24 is dependent upon independent claim 23, and includes all the limitations thereof. For at least the reasons set forth above, Appellants submit that Josié does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 23, and that Sekine fails to teach or suggest the aforementioned deficiencies of

Josié. More specifically, Appellants submit that Josié in view of Sekine fails to teach or suggest to one having ordinary skill in the art to arrive at, *inter alia*, a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer, as set forth in independent claim 23. Therefore, Appellants submit that Josié in view of Sekine does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of dependent claim 24, and that these references would not have otherwise rendered this claim obvious. Thus, Appellants request reversal of the § 103(a) rejection as to dependent claim 24.

VIII. Conclusion

For the reasons set forth above, and as apparent from examining the invention defined by claims 1-6, 17, 18, 23, and 24, when properly considering the cited references of Kobayashi, Simpson, Josié, and Sekine, respectively, these claims would not have been rendered obvious and define patentable subject matter. Appellants request the Examiner's rejection of claims 1-4 and 6 under 35 U.S.C. § 102(b); rejection of claims 5, 17, and 18 under 35 U.S.C. § 103(a); and rejection of claims 23 and 24 under 35 U.S.C. § 103(a), be reversed, and that the application passed to issuance forthwith.

Submitted,

May 17, 2010
Date

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Appendix of Claims (37 C.F.R. § 41.37(c))

1. An automatic vehicle exterior light control system, comprising:

a controller configured to effect automatic operation as a function of an ambient light value, wherein said ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, said controller is further configured to generate an exterior light control signal as a function of the presence of an atmospheric condition of interest, wherein said controller is further configured to distinguish between reflections off of a highly reflective surface and reflections off of atmospheric conditions of interest, wherein an exterior light control output of said controller is in a first state when reflections off of a highly reflective surface are detected and said exterior light control output is in a second state when reflections off of atmospheric conditions of interest are detected.

2. An automatic vehicle exterior light control system as in claim 1 wherein said highly reflective surface is selected from the group comprising: an at least partially wet road, an at least partially snow covered road, an at least partially ice covered road, a surface of a snow pile along a road, and a surface of an at least partially snow covered road side.

3. An automatic vehicle exterior light control system as in claim 1 wherein said atmospheric condition of interest is selected from the group comprising: fog, mist, snow, sleet, hail, rain, steam, smoke and dust.

4. An automatic vehicle exterior light control system as in claim 3 wherein said highly reflective surface is selected from the group comprising: an at least partially wet road, an at least partially snow covered road, an at least partially ice covered road, a surface of a snow pile along a road, and a surface of an at least partially snow covered road side.

5. An automatic vehicle exterior light control system as in claim 1 wherein said reflections are identified by employing at least one of the parameters selected from the group comprising: mean grayscale value of at least a portion of at least one image, total grayscale value of at least a portion of at least one image, average grayscale value of at least a portion of at least one image,

slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, intercept of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, a coefficient of determination, parabolic fit of at least a portion of column pixel value averages in at least one image, multiple images of differing exposure times, inputs from vehicle pitch sensors, a low-pass filter applied to at least a portion of an image, gradual vertical cutoff in at least a portion of pixel rows within at least one image, row average grayscale value net increase moving downward in at least one image, white-to-red ratio of at least one pixel in at least one white image and at least one pixel in at least one red spectral filtered image, sum of average grayscale values for at least one row in at least one image, increase brightness of controlled vehicle's exterior light and detect increase in reflection, at least one probability function, and at least one neural network.

6. An automatic vehicle exterior light control system as in claim 1 wherein said controller is further configured to manipulate one of the items selected from the group comprising: an exterior light adjustment rate, an image analysis parameter, a sensitivity parameter, fog light signal, taillight brightness, a field of view parameter, a spectral filter parameter, an algorithm parameter, an algorithm activation, an algorithm deactivation, an exterior light maximum brightness limit, and an exterior light minimum brightness limit as a function of detected reflections.

17. An automatic vehicle exterior light control system, comprising:

a controller configured to effect automatic operation as a function of an ambient light value, wherein said ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, said controller is further configured to identify the source of a reflection in an image by employing at least one of the parameters selected from the group comprising: mean grayscale value of at least a portion of at least one image, total grayscale value of at least a portion of at least one image, average grayscale value of at least a portion of at least one image, slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale

value of at least a portion of a column of pixels within at least one image, intercept of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, a coefficient of determination, parabolic fit of at least a portion of column pixel value averages in at least one image, multiple images of differing exposure times, inputs from vehicle pitch sensors, a low-pass filter applied to at least a portion of an image, gradual vertical cutoff in at least a portion of pixel rows within at least one image, row average grayscale value net increase moving downward in at least one image, white-to-red ratio of at least one pixel in at least one white image and at least one pixel in at least one red spectral filtered image, sum of average grayscale values for at least one row in at least one image, increase brightness of controlled vehicle's exterior light and detect increase in reflection, at least one probability function, and at least one neural network, wherein a state of an exterior light control output of said controller is at least partially dependent upon the source of said reflection in said image.

18. An automatic vehicle exterior light control system as in claim 17 wherein said controller is further configured to manipulate one of the items selected from the group comprising: an exterior light adjustment rate, an image analysis parameter, a sensitivity parameter, fog light signal, taillight brightness, a field of view parameter, a spectral filter parameter, an algorithm parameter, an algorithm activation, an algorithm deactivation, an exterior light maximum brightness limit, and an exterior light minimum brightness limit as a function of detected reflections.

23. An automatic vehicle exterior light control system, comprising:

a controller configured to effect automatic operation as a function of an ambient light value, wherein said ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, said controller is further configured to detect at least one of a pedestrian and a bicyclist and further configured to provide a corresponding indication to an operator of a controlled vehicle, wherein a state of an exterior light control output of said controller is at least partially dependent upon detection of either a pedestrian or a bicyclist.

24. An automatic vehicle exterior light control system as in claim 23 further configured to disable automatic operation of at least one high beam headlight in response to an operator activated input device.

Evidence Appendix (35 U.S.C. § 41.37(c))

None.

Related Proceedings Appendix (35 U.S.C. § 41.37(c))

None.